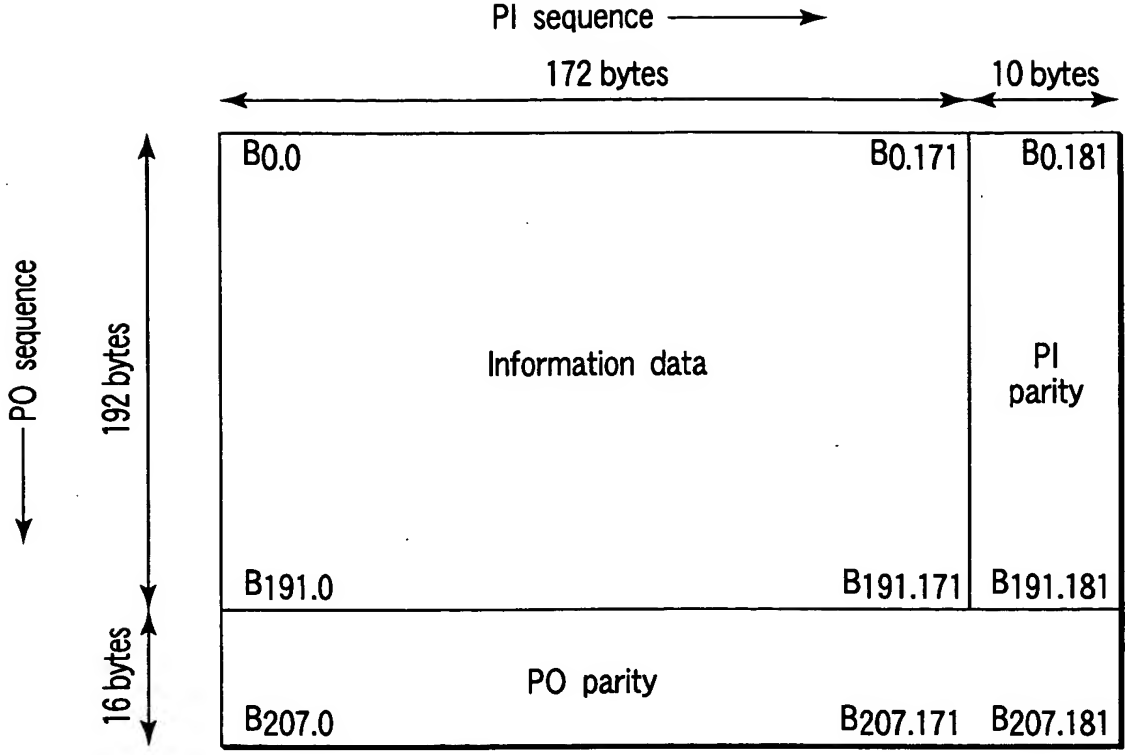
PI sequence
172 bytes
10 bytes
PO sequence
192 bytes
16 bytes
B0.0
B0.171
B0.181
Information data
PI parity
B191.0
B191.171
B191.181
PO parity
B207.0
B207.171
B207.181

FIG. 1

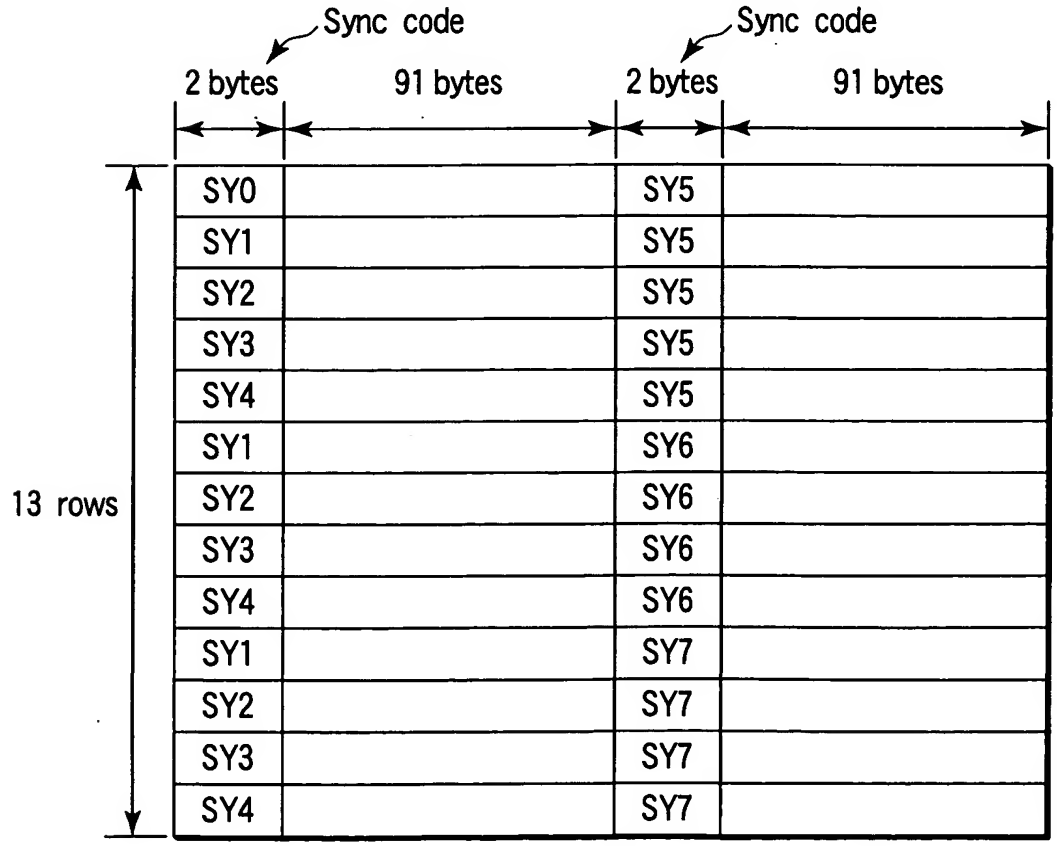
Sync code
Sync code
2 bytes
91 bytes
2 bytes
91 bytes
13 rows
SY0
SY1
SY2
SY3
SY4
SY1
SY2
SY3
SY4
SY1
SY2
SY3
SY4
SY5
SY5
SY5
SY5
SY5
SY6
SY6
SY6
SY6
SY7
SY7
SY7
SY7

FIG. 2

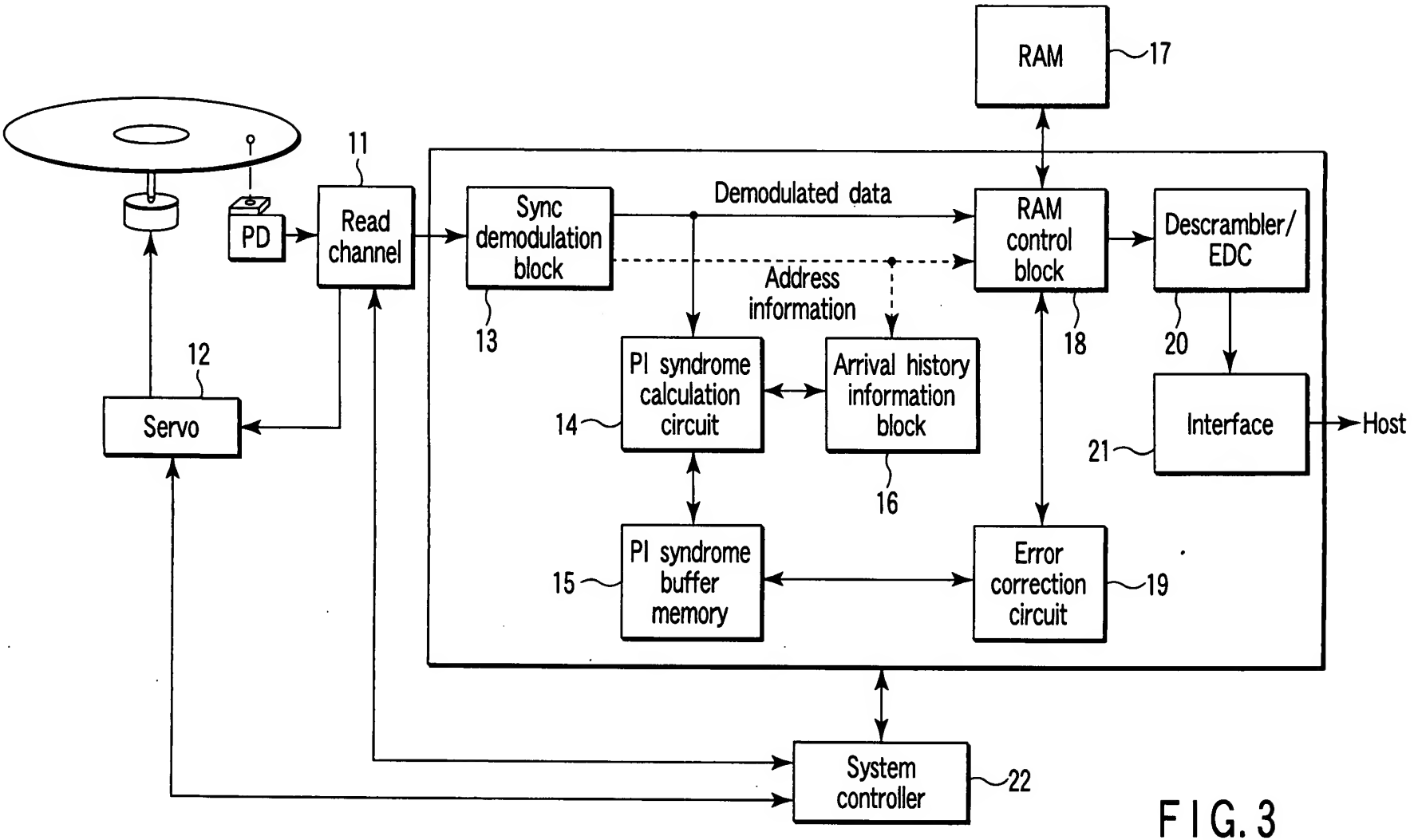
RAM
17
11
PD
Read channel
Sync demodulation block
Demodulated data
RAM control block
Descrambler/ EDC
Address information
13
18
20
12
PI syndrome calculation circuit
Arrival history information block
Interface
Host
Servo
14
21
16
PI syndrome buffer memory
Error correction circuit
15
19
System controller
22

FIG. 3

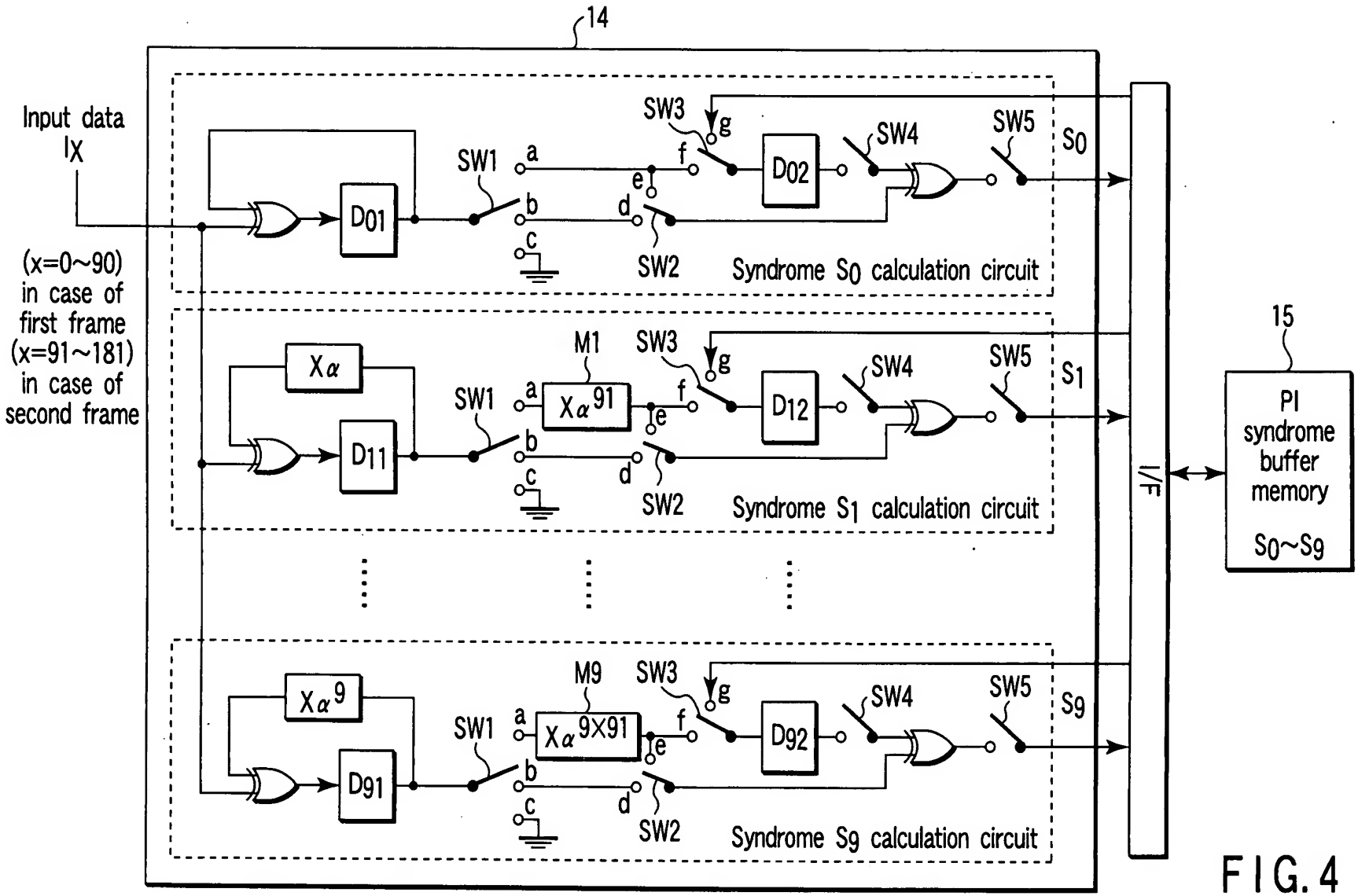
14
Input data
IX
(x=0~90)
in case of
first frame
(x=91~181)
in case of
second frame
SW1
SW2
SW3
SW4
SW5
D01
D02
D11
D12
D91
D92
Xα
Xα9
M1
M9
Xα91
Xα9X91
S0
S1
S9
Syndrome S0 calculation circuit
Syndrome S1 calculation circuit
Syndrome S9 calculation circuit
I/F
15
PI
syndrome
buffer
memory
S0~S9

FIG. 4

Normal case (frames arrive successively)	SW1	SW2	SW3	SW4	SW5
Calculate first 91 bytes	c	d	f	off	off
Store calculation result	a	d	f	off	off
Calculate second 91 bytes	c	d	f	off	off
Store total in buffer	b	d	f	on	on

When second frame has been lost	SW1	SW2	SW3	SW4	SW5
Calculate first 91 bytes	c	d	f	off	off
Store calculation result	a	d	f	off	off
Store total in buffer	c	d	f	on	on

When first frame has been lost	SW1	SW2	SW3	SW4	SW5
Calculate second 91 bytes	c	d	f	off	off
Store total in buffer	b	d	f	off	on

When second frame arrives later	SW1	SW2	SW3	SW4	SW5
Calculate second 91 bytes Call calculation result simultaneously	c	d	g	off	off
Store total in buffer	a	e	g	on	on

When first frame arrives later	SW1	SW2	SW3	SW4	SW5
Calculate first 91 bytes Call calculation result simultaneously	c	d	g	off	off
Store total in buffer	b	d	g	on	on

FIG. 5

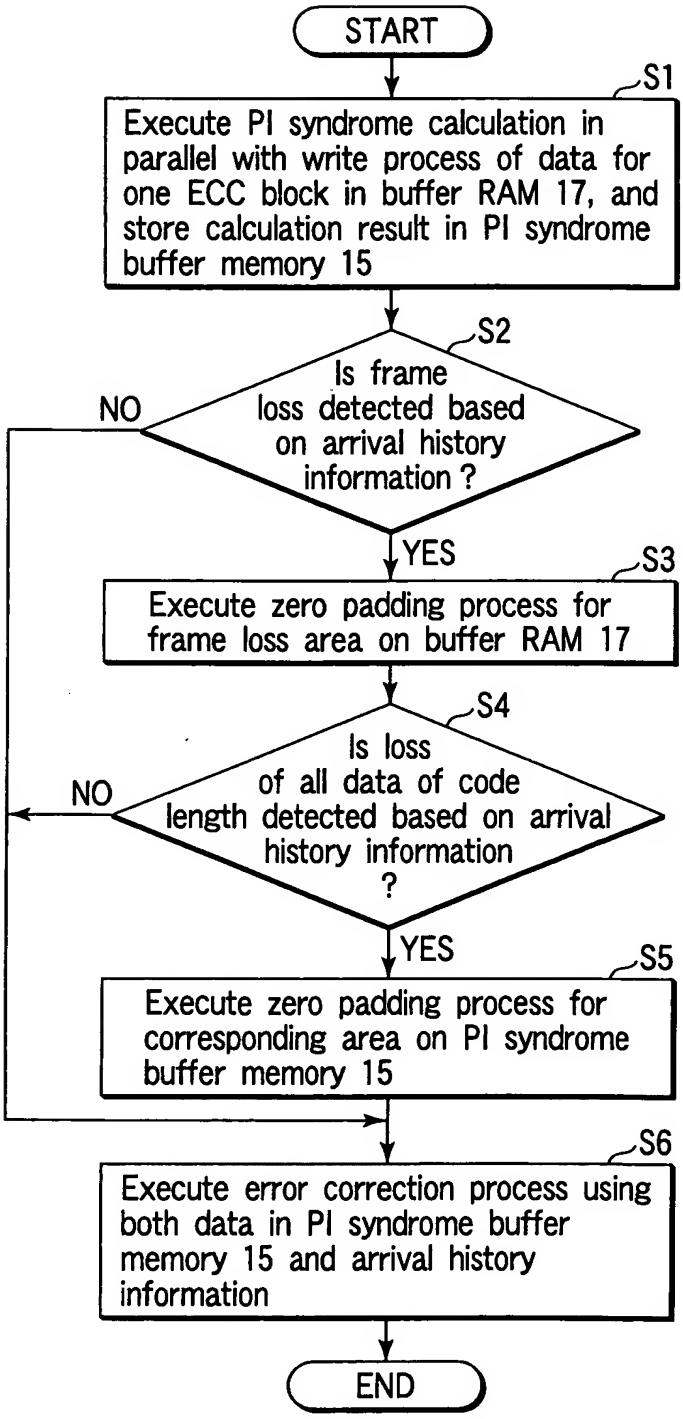
START
S1
Execute PI syndrome calculation in parallel with write process of data for one ECC block in buffer RAM 17, and store calculation result in PI syndrome buffer memory 15
S2
Is frame loss detected based on arrival history information ?
NO
YES
S3
Execute zero padding process for frame loss area on buffer RAM 17
S4
Is loss of all data of code length detected based on arrival history information ?
NO
YES
S5
Execute zero padding process for corresponding area on PI syndrome buffer memory 15
S6
Execute error correction process using both data in PI syndrome buffer memory 15 and arrival history information
END

FIG. 6